

---

U.S. Department of the Interior • U.S. Geological Survey

# MINERAL INDUSTRY SURVEYS

---

Gordon P. Eaton, Director

Reston, VA 20192

---

For information, contact:

Joseph Gambogi, Commodity Specialist

Telephone: (703) 648-7718, Fax: (703) 648-7722

E-mail: [jgambogi@usgs.gov](mailto:jgambogi@usgs.gov)

Robin Kaiser (Data), (703) 648-7948

MINES-DATA: (703) 648-7799

MINES FaxBack: (703) 648-4999

Internet: <http://minerals.er.usgs.gov/minerals>

## TITANIUM IN THE THIRD QUARTER 1996

### Ores and Concentrates

Australian titanium mineral sands producer RGC Ltd. acquired controlling interest in Cudgen RZ Ltd. Through the acquisition, RGC now holds controlling interest in fellow mineral sands producer Consolidated Rutile Ltd (CRL). In addition to CRL's titanium operations in Australia, CRL holds 50% interest in Sierra Rutile Ltd.'s idled mining operations in Sierra Leone.<sup>1</sup> In Australia, after 8 years of production, CRL's dredging operations on North Stradbroke Island exhausted the Bayside deposit. CRL plans to begin production from the Ibis-Alpha deposit on North Stradbroke Island in January 1997.<sup>2</sup>

The Ministry of Trade of Finland offered an invitation to tender for the rights to conduct investigations and commercial development of the Kalvia ilmenite deposit near Kokkola. According to the Geological Survey of Finland, the deposit contains 44 million metric tons of resources to a depth of 150 meters with 15% ilmenite and 5 to 6% magnetite.<sup>3</sup>

Kenmare Resources and BHP Minerals signed a joint venture agreement to explore and possibly develop the Congolone deposit in Mozambique. During work performed under a previous memorandum of understanding between the two companies, the deposit was estimated to contain a resource of 50.5 million tons of ilmenite.<sup>4</sup>

### Metal

According to the U.S. Geological Survey, receipts of titanium scrap totaled 11,600 tons with 3,480 tons of home scrap and 8,150 tons of purchased scrap. Scrap receipts increased significantly compared with those of the previous quarter. Ingot

shipments were 5,640 tons.

According to the Japan Titanium Society, Japanese production and shipments of titanium sponge for the third quarter were 5,170 tons and 5,470 tons, respectively. Ingot production and mill product shipments were 3,370 tons and 2,550 tons, respectively.

Titanium Metals Corp. (Timet) acquired nearly all of the assets of Axel Johnson Metals Inc. (AJM), a subsidiary of Axel Johnson Inc. Consequently, Titanium Hearth Technologies (THT), the joint venture between Timet and AJM, is now wholly owned by Timet. In addition to the THT melting operations, Timet acquired AJM melting and scrap processing operations in California and Pennsylvania. The acquired THT and AJM melting facilities produce titanium ingot via electron-beam and vacuum-arc-reduction melting.<sup>5</sup>

### Notice

Excluding prices, the data in this publication have been rounded to three significant figures.

---

<sup>1</sup> Industrial Minerals. RGC gets Cudgen. No. 348, Sept. 1996, p. 19.

<sup>2</sup> Mining Journal. CRL Looks to the Future. V. 327 No. 8402. Nov. 1, 1996, pp. 345, 346.

<sup>3</sup> Industrial Minerals. Kalvia Ilmenite Deposit Up for Tender. No. 348, Sept. 1996, p. 28.

<sup>4</sup> ———. BHP/Kenmare Commit to Minsands JV. No. 348, Sept. 1996, p. 31.

<sup>5</sup> Platt's Metals Week. Timet Completes AJM Acquisition. V. 67, No. 40, Oct. 7, 1996, p. 11.

TABLE 1  
COMPONENTS OF U.S. TITANIUM METAL SUPPLY AND DEMAND 1/

(Metric tons)

	1995			1996			
	Third quarter	Fourth quarter	Year to date	First quarter	Second quarter	Third quarter 2/	Year to date
Production:							
Sponge	W	W	W	W	W	W	W
Ingot	9,890	10,600	39,800	12,300	13,000	13,000	38,300
Mill products	6,140	6,200	23,300	7,150	8,790	7,790	23,700
Exports:							
Sponge	79	45	225	87	62	118	267
Scrap	778	599	3,420	540	600	735	1,880
Ingot, slab, sheet bar, etc.	534	495	1,960	640	1,080	673	2,390
Other unwrought	81	240	603	118	111	61	290
Bars, rods, profiles, and wire	830	445	2,030	522	332	199	1,050
Other wrought	690	790	2,560	737	1,010	459	2,200
Total	2,990	2,610	10,800	2,640	3,190	2,250	8,080
Imports:							
Sponge	1,580	1,150	7,560	2,480	2,010	1,480	5,980
Waste and scrap	2,920	3,720	11,100	4,210	4,130	3,070	11,400
Ingot, billet	320	574	1,880	444	309	585	1,340
Other unwrought	270	229	1,180	108	132	162	402
Articles of titanium	29	35	272	58	108	40	206
Other wrought (mill products)	308	690	1,600	1,320	1,000	1,260	3,580
Total	5,430	6,400	23,600	8,630	7,690	6,600	22,900
Stocks, end of period:							
Sponge, Government 3/	33,400	33,400	XX	33,400	33,400	33,400	XX
Sponge, Industry	6,290	5,270	XX	5,290	5,500	4,000	XX
Scrap	9,080	9,430	XX	11,800	10,100	15,400	XX
Ingot	2,820	3,560	XX	4,120	3,940	3,970	XX
Total industry	18,200	18,300	XX	21,200	19,600	23,300	XX
Consumption:							
Sponge	5,370	5,600	21,500	6,680	6,310	8,570	21,600
Scrap	4,870	5,850	20,600	6,110	6,130	6,740	19,000
Ingot	7,390	7,930	30,600	8,960	10,100	9,420	28,500
Mill products (net shipments):	5,150	5,340	19,800	6,010	6,110	6,750	18,900
Forging and extrusion billet	2,410	2,390	8,820	2,340	2,330 r/	3,170	7,840
Rod and bar	667	917	2,770	655	981 r/	670	2,310
Other 4/	2,080	2,040	8,180	3,010	2,800 r/	2,910	8,720
Castings (shipments)	99	76	480	227	169	139	535

r/ Revised. W Withheld to avoid disclosing company proprietary data. XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Imports and exports for third quarter 1996 include July and August only. September 1996 data not available at time of publication. Production and consumption data are for full quarter.

3/ Includes 23,600 tons stockpile grade and 9,860 tons nonstockpile grade material.

4/ Data for sheet and strip, plate, fastener stock and wire, extrusions (other than tubing), pipe and tubing, and other have been combined to avoid disclosing company proprietary data.

TABLE 2  
COMPONENTS OF U.S. TITANIUM DIOXIDE PIGMENT SUPPLY AND DEMAND 1/

(Metric tons)

	1995			1996			
	Third quarter	Fourth quarter	Year to date	First quarter	Second quarter	Third quarter	Year to date
Production	309,000	291,000	1,250,000	296,000	307,000	304,000	906,000
Imports 2/	44,500	39,600	183,000	41,900	41,000	NA	NA
Exports 3/	81,600	64,900	342,000	76,500	75,300	NA	NA
Stocks, end of period	111,000	120,000	XX	129,000	116,000	98,300	XX
Apparent consumption 4/	261,000	257,000	1,080,000	252,000	285,000	NA	NA

NA Not available. XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Based on Harmonized Tariff Schedule of the United States (2823.00.0000, 3206.10.0050, and 3206.10.0010).

3/ Based on Harmonized Tariff Schedule of the United States (2823.00.0000 and 3206.10.0000).

4/ Apparent consumption = production + imports - exports - stock increase or + stock decrease.

Source: Bureau of the Census.

TABLE 3  
U.S. EXPORTS OF TITANIUM PRODUCTS 1/

(Metric tons)

	1995			1996			
	Third quarter	Fourth quarter	Year to date	First quarter	Second quarter	July-August	Year to date
Metal:							
Unwrought:							
Sponge	79	45	225	87	62	118	267
Scrap	778	599	3,420	540	600	735	1,880
Billet	113	79	343	130	88	44	262
Blooms and sheet bars	321	251	1,130	401	943	611	1,960
Ingot	100	165	483	109	50	18	177
Other unwrought	81	240	603	118	111	61	290
Wrought:							
Bars, rods, profiles, and wire	830	445	2,030	522	332	199	1,050
Other	690	790	2,560	737	1,010	459	2,200
Ores and concentrates	1,950	4,690	32,300	3,090	5,630	362	9,080
Oxides	7,810	9,210	36,000	8,320	7,730	6,200	22,200
Pigments	73,800	55,700	306,000	68,200	67,600	47,100	183,000

1/ Data are rounded to three significant digits; may not add to totals shown.

Source: Bureau of the Census.

TABLE 4  
U.S. IMPORTS FOR CONSUMPTION OF TITANIUM METAL 1/

(Metric tons)

	1995			1996			
	Third quarter	Fourth quarter	Year to date	First quarter	Second quarter	July- August	Year to date
Unwrought:							
Sponge:							
China	118	135	478	79	176	161	417
Japan	273	466	1,140	849	891	641	2,380
Russia	1,110	519	5,490	1,450	644	400	2,490
Other	78	34	452	108	301	282	691
Total	1,580	1,150	7,560	2,480	2,010	1,480	5,980
Waste and scrap:							
Canada	53	103	368	91	101	84	275
France	103	56	364	228	251	133	613
Germany	295	109	613	140	182	153	475
Japan	309	682	1,830	487	692	498	1,680
Italy	245	288	794	406	233	303	942
Russia	860	1,630	3,800	1,950	1,390	890	4,230
United Kingdom	645	617	2,350	656	861	792	2,310
Other	407 r/	235 r/	988 r/	251 r/	419	218	889
Total	2,920	3,720	11,100	4,210	4,130	3,070	11,400
Ingot and billet:							
France	86	56	275	26	5	--	30
Kazakstan	--	--	--	91	--	--	91
Japan	5	24	32	43	3	2	48
Russia	51	342	918	183	240	363	786
United Kingdom	178	118	622	86	62	153	301
Other	--	34	34	15 r/	--	10	10
Total	320	574	1,880	444	309	585	1,340
Powder	46	93	238	39	36	70	145
Other 2/	224	136	941	69	96	92	257
Wrought:							
Articles of titanium:							
Castings	1	1	4	1	1	1	3
Other	28	33	267	57	107	39	203
Other wrought (mill products):							
Bars, rods, profiles, and wire	167	153	540	416	187	218	821
Plates, sheets, strips, and foil	69	445	737	775	746	717	2,240
Tubes and pipes	27	37	96	119	59	82	260
Other	45	55	222	10	9	239	258
Total mill products	308	690	1,600	1,320	1,000	1,260	3,580

r/ Revised.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes blooms, sheet bars, slabs, and other.

Source: Bureau of the Census.

TABLE 5  
U.S. IMPORTS FOR CONSUMPTION OF TITANIUM CONCENTRATES 1/

(Metric tons)

	1995			1996			
	Third quarter	Fourth quarter	Year to date	First quarter	Second quarter	July- August	Year to date
Ilmenite:							
Australia	123,000	74,400	294,000	89,100	58,000	68,900	216,000
Sierra Leone	--	--	5,950	--	--	--	--
Ukraine	21,500	--	41,200	15,800	--	--	15,800
Other	80	--	131,000	80,100	34,200	29,400	144,000
Total	144,000	74,400	473,000	185,000	92,200	98,400	376,000
Titanium slag:							
Australia	--	--	--	--	--	--	--
Canada	18	10,200	41,200	6,750	4,790	--	11,500
South Africa	106,000	103,000	347,000	41,600	108,000	57,200	207,000
Other	--	--	--	--	2	--	2
Total	107,000	113,000	388,000	48,300	113,000	57,200	218,000
Rutile:							
Australia	9,060	18,700	61,700	17,800	8,080	5,390	31,300
Sierra Leone	284	--	10,600	--	--	--	--
South Africa	14,600	39,200	114,000	32,600	37,700	21,100	91,400
Other	1	5,450	5,460	--	843	336	1,180
Total	24,000	63,300	192,000	50,400	46,600	26,800	124,000
Synthetic rutile:							
Australia	38,200	16,300	122,000	35,100	19,100	41,000	95,100
Malaysia	1,520	1,520	4,940	1,900	1,140	1,140	4,180
Other	38	1	43	--	--	27,200	27,200
Total	39,800	17,800	127,000	37,000	20,200	69,300	126,000
Titaniferous iron ore:							
Canada	65,900	1,690	88,400	308	36,200	14,800	51,300

1/ Data are rounded to three significant digits; may not add to totals shown.

Source: Bureau of the Census.

TABLE 6  
U.S. IMPORTS FOR CONSUMPTION OF TITANIUM PIGMENTS 1/

(Metric tons)

	1995			1996			
	Third quarter	Fourth quarter	Year to date	First quarter	Second quarter	July- August	Year to date
80% or more titanium dioxide:							
Canada	14,300	17,100	61,600	13,400	16,300	11,100	40,700
China	1,310	684	3,620	204	316	86	605
Finland	607	424	2,430	374	214	207	795
France	1,240	1,460	5,560	749	718	508	1,970
Germany	4,550	4,480	21,300	3,470	3,470	3,050	10,000
Japan	1,270	1,530	6,000	1,260	1,170	585	3,020
Norway	1,010	780	4,400	1,710	1,390	903	4,000
Poland	975	955	4,300	820	--	--	820
Singapore	1,130	1,090	4,450	1,150	1,090	797	3,030
Slovenia	555	340	1,840	571	198	273	1,040
United Kingdom	621	5	1,680	61	121	--	182
Other	818	733	3,600	929	696	483	2,110
Total	28,400	29,600	121,000	24,700	25,700	17,900	68,300
Other titanium dioxide:							
Canada	4,740	1,060	16,700	392	186	90	668
France	1,650	1,710	8,120	3,130	1,440	1,250	5,830
Germany	293	281	1,260	482	276	232	990
South Africa	1,720	881	6,280	1,230	1,910	1,100	4,240
Spain	660	275	1,250	2,090	2,910	2,990	7,990
United Kingdom	461	213	3,300	819	1,420	280	2,520
Other	472	956	3,180	1,650	971	415	3,040
Total	9,990	5,370	40,400	9,790	9,110	6,370	25,300
Titanium oxide:							
Belgium	468	594	2,610	660	607	371	1,640
Canada	2,550	1,320	8,560	2,580	245	--	2,820
France	1,860	1,670	6,740	1,530	1,870	798	4,200
Germany	67	387	654	1,470	2,300	1,260	5,030
Japan	415	291	1,210	554	281	92	926
United Kingdom	361	--	641	60	61	80	201
Other	408	346	2,070	525	814	587	1,930
Total	6,120	4,600	21,800	7,380	6,180	3,190	16,700
Grand total	44,500	39,600	183,000	41,800	41,000	27,500	110,000

1/ Data are rounded to three significant digits; may not add to totals shown.

Source: Bureau of the Census.

TABLE 7  
PUBLISHED PRICES OF TITANIUM MATERIALS

(End of period, third quarter 1996)

Specification of material	Range
Ilmenite, per metric ton:	
F.o.b. Australian ports	\$87 -- \$99
Titanium slag, per metric ton: 1/	
80% TiO <sub>2</sub> , Canada	292
85% TiO <sub>2</sub> , South Africa	371
Rutile, per metric ton:	
Natural:	
Bagged, f.o.b. Australian ports	750 -- 950
Bulk, f.o.b. Australian ports	525 -- 625
Sponge metal, per pound:	
Estimated, domestic	4.25 -- 4.50
Titanium scrap, per pound:	
Turnings, unprocessed (Ti-6Al-4V)	.85 -- .90
Ferrotitanium, per pound:	
70% (max. 4.5% Al) per pound Ti	1.60 -- 1.70
Titanium dioxide pigment, per pound:	
Anatase, f.o.b. U.S. plants, list price	1.07 -- 1.09
Rutile, f.o.b. U.S. plants, list price	1.08 -- 1.10
1/ Estimated based on U.S. imports for consumption.	

Sources: American Metal Market, Chemical Marketing Reporter, Industrial Minerals (London), Platt's Reporter, Platt's Metals Week, and industry contacts.